

Aritra Dasgupta

Research Assistant Professor

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Research Experience (Information Visualization and Visual Analytics)

Research Assistant Professor (NYU, Nov 2014-), **Postdoctoral Research Fellow** (NYU & DataONE, Nov 2012 –Oct 2014)

Over the past two years, I have led multiple projects in collaboration with climate scientists and geologists from ORNL, NAU, Stanford and USFS as part of the NSF funded DataONE initiative. The different projects involved: translating domain-specific intents into concrete visualization tasks, building novel visualization systems and techniques for complex, multivariate, spatiotemporal data reflecting those tasks; and applying visualization design principles for evaluating, critiquing, and improving the state-of-the-art visualization practices within the climate science community.

University of North Carolina at Charlotte, Doctoral Research, 2008-2012

The goal of my dissertation was to study how visual representations are affected by the translation of data on to a screen-space of limited resolution. The outcome of my research are quantifiable means for describing visual information, that has two-fold applications: *user-centric optimization of a visualization* when there is inherent information loss, for example, when visualizing high-dimensional and/or temporal data; and *controlling the visual structures* to protect sensitive information from being leaked, in case of privacy-preserving data analysis.

Pacific Northwest National Lab (Visualization Research Intern, summers of 2009 and 2010)

Worked on the Information Synthesis and Fusion Project during two consecutive summers. My role was to contribute towards building a framework for integrating disparate feature spaces of different information types, like image, video, text, etc. I worked as part of a team, which focused on developing and evaluating algorithms, based on linear algebraic methods for characterizing diverse feature spaces.

Peer-reviewed Publications (j: journal, c: conference proceedings, o:other)

2014:

- j1. **Aritra Dasgupta**, Jorge Poco, Yaxing Wei, Bob Cook, Enrico Bertini and Claudio Silva . “Bridging Theory with Practice: An Exploratory Study of Visualization Usage and Design for Climate Model Comparison”, IEEE Transactions on Visualization and Computer Graphics, 2015 (in publication).
- j2. Jorge Poco, **Aritra Dasgupta**, Yaxing Wei, William Hargrove, Christopher Schwalm, Deborah Huntzinger, Bob Cook, Enrico Bertini and Claudio Silva. “Visual Reconciliation of Alternative Similarity Spaces in Climate Modeling”, IEEE Transactions on Visualization and Computer Graphics (VAST), vol. 20, no. 12, pp. 1923-1932, 2014.
- j3. Jorge Poco, **Aritra Dasgupta**, Yaxing Wei, William Hargrove, Christopher Schwalm, Bob Cook, Enrico Bertini and Claudio Silva. “SimilarityExplorer: A Visual Inter- Comparison Tool for Multifaceted Climate Data”, vol. 33, Issue 3, pp. 341-350, Computer Graphics Forum (EuroVis) 2014.

o1. **Aritra Dasgupta**, Eamonn Maguire, Alfie Abdul-Rahman and Min Chen, “Opportunities and Challenges for Privacy-Preserving Visualization of Electronic Health Record Data”, In Proceedings of IEEE VIS 2014 Workshop on Electronic Health Records Visualization.

2013:

- o2. Brian Duffy, **Aritra Dasgupta**, Robert Kosara, Simon Walton, Min Chen, Measuring Visual Complexity of Cluster-Based Visualizations, arXiv:1302.5824v1, 2013.
- j4. **Aritra Dasgupta**, Min Chen and Robert Kosara. “Measuring Privacy and Utility in Privacy-Preserving Visualization”, Computer Graphics Forum, vol. 32, no.8, pp. 35-47, 2013.
- o3. Yaxing Wei, Robert B. Cook, Fei Du, **Aritra Dasgupta**, Jorge Poco, Debbie Huntzinger, Christopher Schwalm, Enrico Boldrini, Mattia Santoro, Jay Pearlman, Francoise Pearlman, Stefano Nativi, and Siri Jodha Khalsa, “Integrating Data into Scientific Workflows for Terrestrial Biosphere Model Evaluation through Brokers”; American Geophysical Union (AGU), 2013.
- o4. Deborah N Huntzinger, Christopher R. Schwalm, Anna M. Michalak, Robert B. Cook, Andrew R. Jacobson, Kevin Schaefer, Yaxing Wei, **Aritra Dasgupta**, Jorge Poco, and MsTMIP modeling teams, Global net land carbon sink: Results from the Multi-scale Synthesis and Terrestrial Model Intercomparison Project (MsTMIP); American Geophysical Union (AGU), 2013.

2012:

- c1. **Aritra Dasgupta**, Robert Kosara and Luke Gosink. “Meta Parallel Coordinates For Visualizing Features in Large, High-

Dimensional, Time-Varying Data”, *IEEE Symposium on Large Data Analysis and Visualization*, pp. 85-89, 2012.

c2. **Aritra Dasgupta** and Robert Kosara. “The Importance of Tracing Data Through the Visualization Pipeline”, *Beyond Time and Errors- Novel Evaluation Methods for Visualization (BELIV)*, 2012.

j5. **Aritra Dasgupta**, Min Chen and Robert Kosara. “Conceptualizing Visual Uncertainty in Parallel Coordinates”, *Computer Graphics Forum*, (EuroVis), vol. 31, no. 3pt2, pp. 1015-1024, 2012.

2011:

j6. **Aritra Dasgupta** and Robert Kosara. “Adaptive Privacy-Preserving Visualization Using Parallel Coordinates”, *IEEE Transactions on Visualization and Computer Graphics*, (InfoVis), vol. 17, no. 7, pp. 2241-2248, 2011.

c3. **Aritra Dasgupta** and Robert Kosara. “Privacy-Preserving Data Visualization Using Parallel Coordinates”, *In Proceedings, Visualization and Data Analysis*, vol. 7868 pp. 786800-1-786800-12, 2011.

2010:

j7. **Aritra Dasgupta** and Robert Kosara. “Pargnostics: Screen-Space Metrics for Parallel Coordinates”, *IEEE Transactions on Visualization and Computer Graphics*, (InfoVis) 2010, vol. 16, no. 6, pp. 1017-1026.

c4. **Aritra Dasgupta** and Robert Kosara. “The Need for Information Loss Metrics in Visualization”, *Workshop on The Role of Theory in Information Visualization*, VisWeek 2010.

Presentations and Posters

1. **Aritra Dasgupta**, “What you Show Vs What Users Get: Bridging the Gap For Visual Analytics”, Invited talk at IBM Watson PIC HCI Workshop, November 2013.
2. **Aritra Dasgupta**, Jorge Poco, Yaxing Wei, Bob Cook, Debbie Hunzinger, Enrico Bertini and Claudio Silva. “A Critical Evaluation of Visualization Design for Terrestrial Biosphere Model Inter-Comparison”, Poster at DataONE All Hands Meeting, October 2013.
3. **Aritra Dasgupta**, Danyel Fisher, Daniel Keim, Robert Kosara, Heidi Lam, and Carlos Scheidegger, “The Role of Visualization in the Big Data Era”, Panel at VIS 2013.
4. **Aritra Dasgupta**, “Information Visualization based Approaches for Inter-Comparison of Terrestrial Biosphere Models”, Invited Talk at Oak Ridge National Lab, June 2013.
5. **Aritra Dasgupta** and Robert Kosara. “Towards Building Diagnostic Models for Visualization”, Doctoral Colloquium, VisWeek 2009.

Technical Reports

6. UV-CDAT Three-year Comprehensive Report, <http://uvcdat.llnl.gov/media/pdf/three-year-comprehensive-report.pdf>

Education

Ph.D., Computer Science

University of North Carolina at Charlotte, NC

2008-2012

Thesis: The Visual Uncertainty Paradigm for Controlling Screen-Space Information in Visualization

M.S., Computer Science

University of North Carolina at Charlotte, NC

Concentration : Knowledge Discovery in Databases

2006-2008

B.Tech., Information Technology

West Bengal University of Technology, Calcutta, India

2001-2005

Work Experience

Research Assistant Professor, NYU

Nov 2014-

Postdoctoral Research Fellow

Nov 2012-Oct 2014

NYU & DataONE

Research Interests: Information Visualization Visual Analytics

Graduate Research Assistant

2010-2012

Charlotte Visualization Center, University of North Carolina at Charlotte

Research: High-dimensional temporal data visualization, visualization theory, information theory, visual analytics.

Graduate Teaching Assistant

2007-2010

Department of Computer Science, University of North Carolina at Charlotte

Courses: Discrete Mathematics, Introduction to Programming, Visual Analytics, Visual Communication.

Data Management Intern

Summer, 2008

Time Warner Cable, Charlotte

Played a key role in a four-member team to build a data warehousing model to satisfy the business intelligence requirements. Other responsibilities included writing and modifying UNIX scripts and complex PL/SQL scripts in PeopleSoft environment.

Programmer Analyst

2005 – 2006

Cognizant Technology Solutions, Kolkata, India

Responsibilities included Development and Customization of ERP tools using Oracle Applications and Oracle PL/SQL

Professional Service

Reviewer: EuroVis (2010, 2011, 2012, 2013, 2014, 2015); IEEE InfoVis (2010, 2011, 2012, 2013, 2014); IEEE Vis(2011); IEEE VAST(2011, 2012, 2013, 2014), IEEE Transactions on Visualization and Computer Graphics (2012, 2013), Computer Graphics Forum (2012, 2013), Computers & Graphics(2013).

Program committee member, EuroVA 2015, EuroVis 2015 Short Papers; *Organizing committee member and Publicity chair*, IEEE VAST Conference 2014; *Student volunteer*, IEEE VisWeek 2009.

Accomplishments

Continuous financial support through the **Graduate Assistant Support Plan**, University of North Carolina at Charlotte, 2006-2011.

Received the prestigious **National Scholarship of Merit** for securing 28th rank among approximately 600,000 students in state level board examination (Secondary level, 10th Grade), 1999.

References

Available on request.